



Application No.: 10/622,511

REMARKS

This amendment is filed in response to the final Office Action dated August 11, 2006. In view of these amendment and remarks, this application should be allowed and the case passed to issue. No new matter is introduced by this amendment. The amendment to claim 1 is supported by claims 4 and 5, as originally filed, and originally filed claim 1, which clearly recited "the positive electrode, the negative electrode and the separator being stacked in a stacked direction."

Claims 1-3, 6-16, and 18 are pending in this application¹. Claims 1-17 are rejected. Claim 18 is withdrawn pursuant to a restriction requirement. Claim 1 has been amended in this response. Claims 4 and 5 have been canceled in this response.

Restriction

Upon the allowance of the automobile cell claims, Applicants respectfully request rejoinder, examination, and allowance of the method of manufacturing an automobile cell, in accordance with MPEP § 821.04.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shibuya et al. (U.S. Pat. No. 6,291,098) in view of Murai et al. (U.S. Pat. No. 6,444,355) and Takami et al. (U.S. Pat. No. 6,544,682). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The following is a comparison between the invention, as claimed, and the cited prior art.

An aspect of the invention, per claim 1, is a stack-type automobile cell comprising an electric power generating element, a positive electrode having a positive electrode active substance layer, a negative electrode having a negative electrode active substance layer, and a

¹ It is noted that the PTOL-326 does not list claim 18 as pending. It is clear, however, from the Examiner's argument in support of the restriction requirement on page 2 of the Office Action, that claim 18 is pending and is withdrawn.

separator interposed between the positive electrode and the negative electrode. The positive electrode, the negative electrode and the separator are stacked in a stack direction to allow the positive electrode and the negative electrode, opposing to the positive electrode via the separator, to define a unit electrode. A cell outer sheath made from a laminate film compositely composed of polymer and metal is welded to gas-tightly encapsulate the electric power generating element inside the cell outer sheath such that the stack-type automobile cell is formed in a flat shape with a thickness defined by the cell outer sheath along the stack direction. A positive electrode terminal lead electrically conductive with the positive electrode is sandwiched between welded portions formed by the cell outer sheath that has been welded and extends to an outside of the cell outer sheath. A negative electrode terminal lead electrically conductive with the negative electrode is sandwiched between welded portions formed by the cell outer sheath that has been welded and extends to the outside of the cell outer sheath. A relationship between the thickness of the stack-type automobile cell and a sum of a thickness of the positive electrode active substance layer and a thickness of the negative electrode active substance layer, along the stack direction of the unit electrodes, is defined such that a value obtained by dividing the thickness of the stack-type automobile cell by the sum of the thickness of the positive electrode active substance layer and the thickness of the negative electrode active substance layer is equal to or greater than 10 and equal to or less than 80. The positive electrode active substance layer is formed on a positive electrode current collector and the negative electrode active substance layer is formed on a negative electrode current collector such that a value obtained by dividing a thickness of the positive electrode terminal lead along the stack direction by a sum of a total thickness of the positive electrode current collector in the stack-type automobile cell is equal to or greater than 0.4 and equal to or less than 2.0. A value obtained by dividing a thickness of the

negative electrode terminal lead along the stack direction by a sum of a total thickness of the negative electrode current collector in the stack-type automobile cell is equal to or greater than 0.4 and equal to or less than 2.0.

The Examiner asserted that Shibuya et al. disclose a thin type cell comprising positive and negative electrodes and electrode thicknesses. The Examiner indicated that Shibuya et al. do not disclose the thickness of the positive electrode current collector, electrolyte, and separator. The Examiner alleged that dividing the thickness of the cell by the thicknesses of the positive and negative electrode active material layers yields a value no greater than ~4.

In view of Murai et al.'s teaching of 30 μm thick aluminum net, the Examiner maintained that it would have been obvious to use aluminum net with a thickness of 30 μm for the benefit of forming a cell with an aluminum net with similar characteristics as the other components of the cell.

The Examiner averred that Takami et al. disclose that the positive electrode layer and the negative electrode layer each has a thickness between 10 μm and 150 μm and that is possible to improve large discharge characteristics and cycle life. The Examiner contended that it would have been obvious to make the battery of Shibuya et al. and Murai et al. with electrode layer thicknesses between 10 μm and 150 μm for the benefit of improving cycle life and that doing so would yield a ratio of thickness of the cell by the thickness of the active substances as high as 36.4.

The Examiner alleged that it would have been obvious to stack several unit cells together to increase cell capacity and, thus yield the claimed electrode terminal sum of electrode current/electrode terminal lead ratio.

Initially, the Examiner's decision not to give patentable weight to the limitations "automobile cell" in claim 1 is traversed. During examination, claims must be considered as a whole. The Examiner is not free to ignore claim limitations. The Examiner's argument that the above argument fails to comply with 37 C.F.R. § 1.111(b) is clearly erroneous, as the error in the Examiner's decision, has been clearly pointed out. The claims must be considered as a whole. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 U.S.P.Q. 871 (Fed. Cir. 1983); *Schenck v. Norton Corp.*, 713 F.2d 782, 218 U.S.P.Q. 698 (Fed. Cir. 1983); MPEP § 2141.02.

Shibuya et al., Murai et al., and Takami et al. whether taken alone, or in combination, do not suggest the claimed stack-type automobile cell. Takami et al. and Murai et al. are directed to wound cells, while Shibuya et al. and the present invention are directed to a stack-type cell. It would not have been obvious to combine the teachings of Murai et al. and Takami et al., directed to wound cells, with the teaching of Shibuya et al., which is directed to stack-type cell. One of ordinary skill in this art attempting to solve a problem in a stack-type cell would not look towards the wound cell teaching of Murai et al. and Takami et al.

Further, the combination of Shibuya et al., Murai et al., and Takami et al. do not suggest a stack-type automobile cell comprising positive and negative electrodes wherein a relationship between the thickness of the automobile cell and a sum of a thickness of the positive electrode active substance layer and a thickness of the negative electrode active substance layer, along the stack direction of the unit electrodes, is defined such that a value obtained by dividing the thickness of the stack-type automobile cell by the sum of the thickness of the positive electrode active substance layer and the thickness of the negative electrode active substance layer is equal to or greater than 10 and equal to or less than 80, the positive electrode active substance layer is formed on a positive electrode current collector and the negative electrode active substance layer

is formed on a negative electrode current collector such that a value obtained by dividing a thickness of the positive electrode terminal lead along the stack direction by a sum of a total thickness of the positive electrode current collector in the stack-type automobile cell is equal to or greater than 0.4 and equal to or less than 2.0, and a value obtained by dividing a thickness of the negative electrode terminal lead along the stack direction by a sum of a total thickness of the negative electrode current collector in the stack-type automobile cell is equal to or greater than 0.4 and equal to or less than 2.0, as required by claim 1.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Shibuya et al. and Murai et al. to modify the thickness of the stack-type automobile cell and a sum of a thickness of the positive electrode active substance layer and a thickness of the negative electrode active substance layer, along the stack direction of the unit electrodes, such that a value obtained by dividing the thickness of the stack-type automobile cell by the sum of the thickness of the positive electrode active substance layer and the thickness of the negative electrode active substance layer is equal to or greater than 10 and equal to or less than 80, the positive electrode active substance layer is formed on a positive electrode current collector and the negative electrode active substance layer is formed on a negative electrode current collector such that a value obtained by dividing a thickness of the positive electrode terminal lead along the stack direction by a sum of a total thickness of the positive electrode current collector in the

stack-type automobile cell is equal to or greater than 0.4 and equal to or less than 2.0, and a value obtained by dividing a thickness of the negative electrode terminal lead along the stack direction by a sum of a total thickness of the negative electrode current collector in the stack-type automobile cell is equal to or greater than 0.4 and equal to or less than 2.0, as required by claim 1.

Therefore claim 1 is not obvious in view of Shibuya et al., Murai et al., and Takami et al.

The only teaching of the claimed stack-type automobile cell comprising positive and negative electrodes wherein a relationship between the thickness of the stack-type automobile cell and a sum of a thickness of the positive electrode active substance layer and a thickness of the negative electrode active substance layer, along the stack direction of the unit electrodes, is defined such that a value obtained by dividing the thickness of the stack-type automobile cell by the sum of the thickness of the positive electrode active substance layer and the thickness of the negative electrode active substance layer is equal to or greater than 10 and equal to or less than 80, the positive electrode active substance layer is formed on a positive electrode current collector and the negative electrode active substance layer is formed on a negative electrode current collector such that a value obtained by dividing a thickness of the positive electrode terminal lead along the stack direction by a sum of a total thickness of the positive electrode current collector in the stack-type automobile cell is equal to or greater than 0.4 and equal to or less than 2.0, and a value obtained by dividing a thickness of the negative electrode terminal lead along the stack direction by a sum of a total thickness of the negative electrode current collector in the stack-type automobile cell is equal to or greater than 0.4 and equal to or less than 2.0, is found in Applicants' disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must both be found in the prior art, and

not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The dependent claims are allowable for at least the same reasons as the independent claims from which they depend and further distinguish the claimed stack-type automobile cell. For example claim 6 further requires a width of the positive electrode terminal lead is equal to or greater than 40 (%) and equal to or less than 80 (%) of a length of one side of the cell outer sheath from which the positive electrode terminal lead extends to the outside. Claim 7 further requires a width of the negative electrode terminal lead is equal to or greater than 40 (%) and equal to or less than 80 (%) of a length of one side of the cell outer sheath from which the negative electrode terminal lead extends to the outside. The cited prior art do not suggest the claimed automobile cell with these additional limitations.

The Examiner, however, citing MPEP § 2144.05, argued that claims 4-6 were not patentably distinct because "[g]enerally, differences in ranges will not support patentability of subject matter encompassed by the prior art unless there is evidence indicating such a range is critical." The present specification, however, discloses the **unexpected improvements** and benefits provided by the claimed stack-type automobile cells wherein the electrode terminal leads and current collectors meet the claimed limitations (See Tables 1-3, specification at pages 48-50).

In view of the above amendments and remarks, Applicants submit that this case should be allowed and passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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